

Application No.: 10/052,621

*R3
Circles
3 zones*
the second zone 224b is the difference between r_2 and r_1 , and of the third zone 224c is the difference between r_2 and r_0 . The disk can have more or fewer than three zones, depending on the application.

IN THE CLAIMS:

Please cancel Claims 1-52 without prejudice to or disclaimer of the subject matter contained therein, and add the following new Claims 53-125:

53. (New) A disk for information storage, comprising:

(a) a substrate; and

(b) an information layer for containing information, wherein at least one of the

following conditions is true: (i) the disk has at least two recording parameters that vary 5 radially outwardly, (ii) the information layer has a writing property that varies radially outwardly, (iii) an underlayer located between the substrate and the information layer has a thickness that varies radially outwardly to cause a recording parameter of the disk to vary radially, and (iv) the information layer has a thickness that increases progressively from an inner disk diameter to an outer disk diameter.

54. (New) The disk of Claim 53, wherein condition (i) is true.

55. (New) The disk of Claim 54, wherein the at least two recording parameters of condition (i) include a coercivity and at least one of a magnetic moment (M_{rt}) and

magnetic remanence and wherein the at least two recording parameters are substantially constant along the length of a selected radial track.

56. (New) The disk of Claim 55, wherein the magnetic remanence and magnetic moment of the disk vary radially outwardly.

57. (New) The disk of Claim 55, wherein the at least one of the magnetic remanence and the magnetic moment ("Mr") of the disk increase from the inner disk diameter to the outer disk diameter, and the coercivity decreases from the inner disk diameter to the outer disk diameter.

58. (New) The disk of Claim 55, wherein a first radial zone has first recording properties that are at least substantially constant throughout the first radial zone and a second radial zone has second recording properties that are at least substantially constant throughout the second radial zone, wherein the first radial zone is located nearer a center of the disk than the second radial zone, and wherein the first and second recording properties are different from one another.

59. (New) The disk of Claim 54, wherein the chemical composition of the information layer varies radially.

60. (New) The disk of Claim 59, wherein the chemical composition of the information layer comprises from about 60 to about 80 atomic percent cobalt, from about 0.5 to about 5 atomic percent chromium, from about 0.5 to about 5 atomic percent tantalum, from about 1 to about 10 atomic percent platinum, and from about 0.5 to about 5 atomic percent boron.

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61. (New) The disk of Claim 55, wherein the magnetic remanence is one of the recording parameters, the magnetic remanence ranges from about 100 to about 600 memu/cm³, and a first magnetic remanence at a first inner radial location is no more than about 95% of a second magnetic remanence at a second outer radial location.

62. (New) The disk of Claim 55, wherein the magnetic moment is one of the recording parameters, the magnetic moment ranges from about 100 to about 600 memu/cm³, and a first magnetic moment at a first inner radial location is no more than about 95% of a second magnetic moment at a second outer radial location.

63. (New) The disk of Claim 53, wherein condition (ii) is true and the writing property is coercivity.

64. (New) The disk of Claim 63, wherein the underlayer has a thickness that decreases from an inner radial location of the disk to an outer radial location of the disk.

65. (New) The disk of Claim 63, wherein the coercivity ranges from about 2,000 to about 6,000 Oersteds and the information layer has a squareness ranging from about 0.6 to about 1.0.

66. (New) The disk of Claim 53, wherein condition (iii) is true.

67. (New) The disk of Claim 66, wherein a coercivity of the information layer decreases from an inner radial location of the disk to an outer radial location of the disk.

68. (New) The disk of Claim 53, wherein condition (iv) is true.

69. (New) The disk of Claim 68, wherein the thickness of the information layer ranges from about 60 to about 300 angstroms and the information layer has a first thickness at a first inner radial location and a second thickness at a second outer radial location and the first thickness is at least about 75% of the second thickness.

70. (New) The disk of Claim 53, wherein the information layer includes a first magnetic layer, a second magnetic layer, and an at least substantially non-magnetic layer located between the first and second magnetic layers and a thickness of at least one of the first and second magnetic layers increases from the inner diameter to the outer diameter.

71. (New) The disk of Claim 70, wherein the substrate includes one of the following: an aluminum plate, a ceramic plate, and a glass-based plate.

72. (New) The disk of Claim 70, further comprising: a protective layer, the information layer being located between the protective layer and the underlayer.

73. (New) The disk of Claim 72, further comprising: a barrier layer that is located between the information layer and the protective layer.

74. (New) The disk of Claim 73, further comprising: a lubricant layer that is located adjacent to the protective layer and separated from the information layer by the protective layer.

75. (New) The disk of Claim 53, further comprising: a nickel-phosphorus layer that is located between the substrate and the underlayer.

76. (New) The disk of Claim 53, wherein conditions (i) and (ii) are true.

77. (New) The disk of Claim 76, wherein a bit length in an outer diameter region is greater than a bit length in an inner diameter region.

78. (New) The disk of Claim 53, wherein, in the at least one of the following conditions, the variation in at least two recording parameters of condition (i), the variation in the writing property of condition (ii), the variation in underlayer thickness of condition (iii), and the increase in information layer thickness of condition (iv), as appropriate, is at least substantially linear.

79. (New) The disk of Claim 53, wherein, in the at least one of the following conditions, the variation in at least two recording parameters of condition (i), the variation in the writing property of condition (ii), the variation in underlayer thickness of condition (iii), and the increase in information layer thickness of condition, as appropriate, is at least substantially rectilinear.

80. (New) The disk of Claim 53, wherein, in the at least one of the following conditions, the variation in at least two recording parameters of condition (i), the variation in the writing property of condition (ii), the variation in underlayer thickness of condition (iii), and the increase in information layer thickness of condition, as appropriate, is at least substantially curvilinear.

81. (New) The disk of Claim 53, wherein, in the at least one of the following conditions, the variation in at least two recording parameters of condition (i), the variation in the writing property of condition (ii), the variation in underlayer thickness of condition (iii), and the increase in information layer thickness of condition, as appropriate, is discontinuous along the radius of the disk.

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82. (New) The disk of Claim 53, wherein the information layer has a first areal density at a first inner radial location and a second areal density at a second outer radial location and the first areal density is at least about 105% of the second areal density.

83. (New) The disk of Claim 82, wherein the first areal density ranges from about 105 to about 140% of the second areal density.

84. (New) A disk for information storage, comprising:

- (a) a substrate; and
- (b) an information layer operable to contain information, wherein at least one of the following conditions is true: (i) the information layer has a first magnetic remanence at a first inner radial location that is more than a second magnetic remanence of the information layer at a second outer radial location; (ii) the information layer has a first magnetic moment at the first inner radial location that is more than a second magnetic moment of the information layer at the second outer radial location; and (iii) the information layer has a first

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10 coercivity at the first inner radial location that is less than a second coercivity of the information layer at the second outer radial location.

85. (New) The disk of Claim 84, wherein a bit length in the second outer radial location is greater than a bit length in the first inner radial location.

86. (New) The disk of Claim 84, wherein condition (i) is true.

87. (New) The disk of Claim 86, wherein the first magnetic remanence is no more than about 95% of the second magnetic remanence.

88. (New) The disk of Claim 87, wherein the first and second magnetic remanence each range from about 100 to about 600 memu/cm³.

89. (New) The disk of Claim 86, wherein the chemical composition of the information layer at the first inner radial location layer is different than the chemical composition of the information layer at the second outer radial location.

90. (New) The disk of Claim 89, wherein the chemical composition is from about 60 to about 80 atomic percent cobalt, from about 0.5 to about 5 atomic percent chromium,

from about 0.5 to about 5 atomic percent tantalum, from about 1 to about 10 atomic percent platinum, and from about 0.5 to about 5 atomic percent boron.



91. (New) The disk of Claim 84, wherein condition (ii) is true.
92. (New) The disk of Claim 91, wherein a first thickness of the information layer at the first inner radial location is greater than a second thickness of the information layer at the second outer radial location.
93. (New) The disk of Claim 92, wherein the first and second thicknesses each range from about 60 to about 300 angstroms.
94. (New) The disk of Claim 91, wherein the first magnetic moment is no more than about 95% of the second magnetic moment.
95. (New) The disk of Claim 94, wherein the first and second magnetic moments each range from about 0.2 to about 1.0 memu/cm².
96. (New) The disk of Claim 84, wherein condition (iii) is true.

97. (New) The disk of Claim 96, wherein the first and second coercivities each range from about 2,000 to about 6,000 Oersteds.

98. (New) The disk of Claim 96, wherein a squareness of the disk at each of the first inner and second outer radial locations ranges from about 0.6 to about 1.0.

99. (New) The disk of Claim 84, wherein the disk further comprises an underlayer between the substrate and the information layer and wherein the underlayer has a first underlayer thickness at the first inner radial location that is greater than a second underlayer thickness of the underlayer at the second outer radial location.

100. (New) The disk of Claim 99, wherein each of the first and second underlayer thicknesses range from about 50 to about 5,000 angstroms.

101. (New) The disk of Claim 85, wherein a first areal density at the first inner radial location is at least about 105% of a second areal density at the second outer radial location.

102. (New) The disk of Claim 84, wherein a radial gradient in at least one of (a) the magnetic remanence in condition (i), (b) the magnetic moment in condition (ii), and (c) the coercivity in condition (iii) is at least substantially linear.

103. (New) The disk of Claim 84, wherein a radial gradient in at least one of (a) the magnetic remanence in condition (i), (b) the magnetic moment in condition (ii), and (c) the coercivity in condition (iii) is at least substantially rectilinear.



104. (New) The disk of Claim 84, wherein a radial gradient in at least one of (a) the magnetic remanence in condition (i), (b) the magnetic moment in condition (ii), and (c) the coercivity in condition (iii) is at least substantially curvilinear.



105. (New) The disk of Claim 84, wherein a radial gradient in at least one of (a) the magnetic remanence in condition (i), (b) the magnetic moment in condition (ii), and (c) the coercivity in condition (iii) is discontinuous along the radius of the disk.

106. (New) A disk for information storage, comprising:

- (a) a substrate; and
- (b) an information layer configured to contain information, wherein a first recording parameter of the information layer at a first radial location is higher than the first recording parameter at a second, different radial location and a second recording parameter of the information layer at the first radial location is lower than the second recording parameter at the second radial location and wherein the first and second first recording parameters are different from one another.

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107. (New) The disk of Claim 106, wherein the first recording parameter is coercivity and the second recording parameter is at least one of magnetic remanence and magnetic moment.

108. (New) The disk of Claim 107, wherein the second recording parameter is magnetic remanence.

109. (New) The disk of Claim 108, wherein the first magnetic remanence at the first radial location is no more than about 95% of the second magnetic remanence at the second radial location.

110. (New) The disk of Claim 109, wherein the first and second magnetic remanence each range from about 100 to about 600 memu/cm³.

111. (New) The disk of Claim 106, wherein the chemical composition of the information layer at the first radial location layer is different than the chemical composition of the information layer at the second radial location.

112. (New) The disk of Claim 111, wherein the chemical composition is from about 60 to about 80 atomic percent cobalt, from about 0.5 to about 5 atomic percent

chromium, from about 0.5 to about 5 atomic percent tantalum, from about 1 to about 10 atomic percent platinum, and from about 0.5 to about 5 atomic percent boron.

113. (New) The disk of Claim 107, wherein a first coercivity is at the first radial location and a second coercivity is at the second radial location.

114. (New) The disk of Claim 113, wherein the first and second coercivities each range from about 2,000 to about 6,000 Oersteds.

115. (New) The disk of Claim 113, wherein a squareness of the disk at each of the first inner and second outer radial locations ranges from about 0.6 to about 1.0.

116. (New) The disk of Claim 113, wherein the disk further comprises an underlayer between the substrate and the information layer and wherein the underlayer has a first underlayer thickness at the first inner radial location that is greater than a second underlayer thickness of the underlayer at the second outer radial location.

117. (New) The disk of Claim 116, wherein each of the first and second underlayer thicknesses range from about 50 to about 5,000 angstroms.

118. (New) The disk of Claim 106, wherein the second recording parameter is magnetic moment and the information layer has a first magnetic moment at the first radial location and a second magnetic moment at the second radial location.

119. (New) The disk of Claim 118, wherein a first thickness of the information layer at the first radial location is greater than a second thickness of the information layer at the second radial location.

120. (New) The disk of Claim 119, wherein the first and second information layer thicknesses each range from about 60 to about 300 angstroms.

121. (New) The disk of Claim 119, wherein the first magnetic moment is no more than about 95% of the second magnetic moment.

122. (New) The disk of Claim 121, wherein the first and second magnetic moments each range from about 0.2 to about 1.0 memu/cm².

123. (New) The disk of Claim 107, wherein a radial gradient in at least one of (a) the magnetic remanence, (b) the magnetic moment, and (c) the coercivity is at least substantially rectilinear.

124. (New) The disk of Claim 107, wherein a radial gradient in at least one of (a) the magnetic remanence, (b) the magnetic moment, and (c) the coercivity is at least substantially curvilinear.

Curvilinear

125. (New) The disk of Claim 107, wherein a radial gradient in at least one of (a) the magnetic remanence, (b) the magnetic moment, and (c) the coercivity is discontinuous along the radius of the disk.